

in which

Y_1 means a hydrogen atom, a hydroxyl group, a fluorine, chlorine or bromine atom or a group $-OCOR_8$, in which

R_8 is an aliphatic or aromatic radical with 1 to 12 C atoms,

Y_2 means a hydrogen atom or a group $-(CO)R_9$, in which

R_9 is an aliphatic or aromatic radical with 1 to 12 C atoms,

R_1 and R_2 each mean a hydrogen atom or together an exocyclic methylene group,

R_3 and R_4 , independently of one another, mean a hydrogen atom, a chlorine or fluorine atom,

an alkyl group with 1 to 4 carbon atoms, or together form a methylene group or together with quaternary carbon atom 20 form a 3- to 7-membered, saturated or unsaturated carbocyclic ring,

V and W together mean an E-double bond or V means a hydroxyl group and W means a hydrogen atom,

Q means a straight-chain or branched carbon unit with up to 10 carbon atoms, which at any position can have α - or β -hydroxyl groups, which in turn can be etherified or esterified, keto groups, amino groups or halogen atoms,

Z means a straight-chain or branched-chain, saturated or unsaturated hydrocarbon radical with up to 12 carbon atoms, which at any positions can have keto groups, α - or β -hydroxyl groups, which in turn can be etherified or esterified, amino groups, chlorine, or bromine atoms

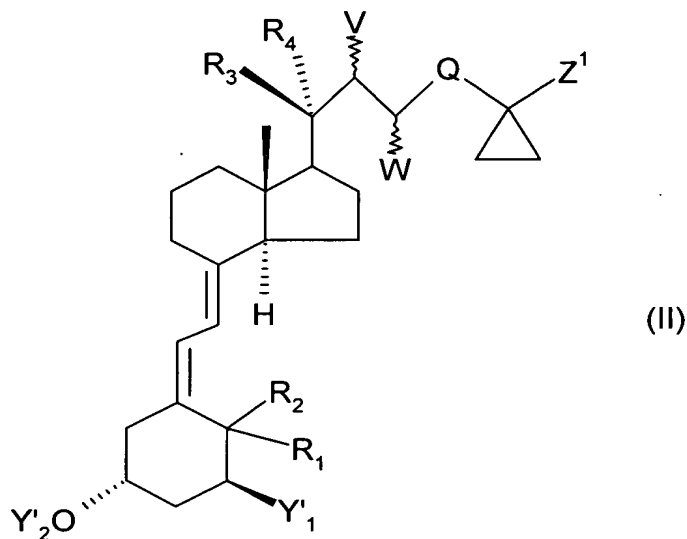
wherein Q is not $-\text{CHOH}-$.

2. (Amended) A compound according to claim 1, wherein Q means an unsubstituted, unbranched alkylene unit with 1 or 2 carbon atoms, and Z means a straight-chain 1-oxoalkyl radical.

3. (Amended) A compound according to claim 1, wherein Q means a $-\text{CH}(\text{OH})-\text{CH}_2-\text{CH}_2$ radical, and Z means a straight-chain 1-oxoalkyl radical.

6. (Amended) A process for the production of compounds according to claim 1, comprising:

converting a compound of formula II



in which

Y'₁ means a hydrogen atom, a halogen atom, or a protected hydroxyl group and Y'₂ means a hydroxy protective group,

into a compound of formula I by simultaneous or successive cleavage of the hydroxy and keto protective groups and optionally by partial or complete esterification of free hydroxyl groups.

8. (Amended) A method for treating a patient suffering from hyperproliferative diseases of the skin, pruritus, tumor diseases, precancerous stages, disorders of the immune system, inflammatory diseases, rheumatoid arthritis, asthma, auto-immune diseases, multiple sclerosis, diabetes mellitus, AIDS, or rejection reactions associated with autologous, allogeneic or xenogeneic transplants comprising administering to said patient an effective amount of a compound according to claim 1.

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9. (Amended) A method according to claim 8, wherein said compound is administered in combination with other substances that have an immunosuppressive action.

10. (Amended) A method for treating a patient suffering from secondary hyperparathyroidism, renal osteodystrophia, senile and postmenopausal osteoporosis, diabetes

mellitus type II, or degenerative diseases of the peripheral and central nervous system comprising administering to said patient an effective amount of a compound according to claim 1.

11. (Amended) A method for treating a patient suffering from hypercalcemias or granulomatous diseases, paraneoplastic hypercalcemias, hypercalcemia in the case of hyperparathyroidism, hirsutism, arteriosclerosis, or inflammatory diseases comprising administering to said patient an effective amount of a compound according to claim 1.

Please add the following new claims:

-- 14. A pharmaceutical composition comprising a compound according to claim 1 and a pharmaceutically acceptable carrier.

15. A method according to claim 9, wherein said other substance is selected from cyclosporin A, FK 506, rapamycin and anti-CD 4 antibodies.

16. A method for regulating hair growth in a patient comprising administering to said patient an effective amount of a compound according to claim 1.

17. A method of providing birth control to a male or female patient comprising administering to said patient a compound according to claim 1.

18. A method of inducing an immunostimulant effect in a patient comprising administering to said patient a compound according to claim 1.

19. A vitamin D compound wherein said compound is:
(5Z, 7E, 22E)-(1S, 3R, 24S)-25-ethyl-26,27-cyclo-9,10-secocholesta-5,7,10(19),22-tetraene-1,3-24-triol,
(5Z, 7E, 22E)-(1S, 3R, 24R)-25-ethyl-26,27-cyclo-9,10-secocholesta-5,7,10(19),22-tetraene-1,3-24-triol,
[5Z, 7E, 22E, 25(Z)]-(1S, 3R, 24S)-25-(1-butenyl)-26,27-cyclo-9,10-secocholesta-5,7,10(19),22-tetraene-1,3-24-triol,
[5Z, 7E, 22E, 25(E)]-(1S, 3R, 24S)-25-(1-butenyl)-26,27-cyclo-9,10-secocholesta-5,7,10(19),22-tetraene-1,3-24-triol,

[5Z, 7E, 22E, 25(E)]-(1S, 3R, 24R)-25-(1-butenyl)-26,27-cyclo-9,10-secocholesta-5,7,10(19),22-tetraene-1,3,24-triol,
 (5Z, 7E, 22E)-(1S, 3R, 24S)-25-butyl-26,27-cyclo-9,10-secocholesta-5,7,10(19),22-tetraene-1,3,24-triol,
 (5Z, 7E, 22E)-(1S, 3R, 24R)-25-butyl-26,27-cyclo-9,10-secocholesta-5,7,10(19),22-tetraene-1,3,24-triol,
 (5Z, 7E, 22E)-(1S, 3R, 24S)-25-hexyl-26,27-cyclo-9,10-secocholesta-5,7,10(19),22-tetraene-1,3,24-triol,
 (5Z, 7E, 22E)-(1S, 3R, 24R)-25-hexyl-26,27-cyclo-9,10-secocholesta-5,7,10(19),22-tetraene-1,3,24-triol,
 (5Z, 7E, 22E)-(1S, 3R, 24S)-25-heptyl-26,27-cyclo-9,10-secocholesta-5,7,10(19),22-tetraene-1,3,24-triol,
 (5Z, 7E, 22E)-(1S, 3R, 24R)-25-heptyl-26,27-cyclo-9,10-secocholesta-5,7,10(19),22-tetraene-1,3,24-triol,
 (5Z, 7E, 22E)-(1S, 3R, 24S)-25-octyl-26,27-cyclo-9,10-secocholesta-5,7,10(19),22-tetraene-1,3,24-triol,
 (5Z, 7E, 22E)-(1S, 3R, 24R)-25-octyl-26,27-cyclo-9,10-secocholesta-5,7,10(19),22-tetraene-1,3,24-triol,
 [5Z, 7E, 22E, 25(Z)]-(1S,3R,24S)-25-(1-octenyl)-26,27-cyclo-9,10-secocholesta-5,7,10(19),22-tetraene-1,3,24-triol, or
 [5Z, 7E, 22E, 25(Z)]-(1S,3R,24S)-25-(1-octenyl)-26,27-cyclo-9,10-secocholesta-5,7,10(19),22-tetraene-1,3,24-triol.

20. A compound according to claim 1, wherein R_1 and R_2 are each hydrogen.

21. A compound according to claim 1, wherein R_3 is H and R_4 is methyl, R_3 is methyl and R_4 is H, R_3 is F and R_4 is methyl, R_3 is methyl and R_4 is F, R_3 is methyl and R_4 is methyl or R_3 and R_4 , together form a methylene group, or R_3 and R_4 together with carbon atom 20 form a cyclopropyl ring.

22. A compound according to claim 1, wherein R_8 and R_9 are each independently methyl, ethyl, propyl, i-propyl, butyl or phenyl.

23. A compound according to claim 1, wherein Q is $-\text{CH}_2-$, $-(\text{CH}_2)_2-$, $-(\text{CH}_2)_3-$, $-(\text{CH}_2)_4-$, $-(\text{CH}_2)_7-$, $-\text{CH}_2-\text{C}(\text{CH}_3)_2-\text{CH}_2-$, $-\text{CH}_2-\text{CH}(\text{CH}_3)-\text{CH}_2-\text{CH}(\text{CH}_3)-\text{CH}_2-$, $-\text{CH}_2-\text{CH}(\text{OH})-$,

-CH₂-CH₂-CH(OH)-, -CH(OH)-CH₂-, -CH(OH)-CH₂-CH₂-, -CH₂-CH(OH)-CH₂-CH(OH)-CH₂-,
 -CH₂-CH(OH)-CH₂-, -CH₂-CH(OH)-CH₂-CH(OH)-CH₂-, -CH(OCH₃)-, -CH₂-CH(OC₂H₅)-,
 -CH₂-CH(OCOCH₃)-CH₂-CH(OCOCH₃)-CH₂-, -CH₂-CH(OCOC₄H₉)-CH₂-, -CO-CH₂,
 -CO-CH₂-CH₂-, -CH₂COCH₂-, -CH(Cl)-, -CH(Cl)-CH₂-, -CH₂-CH(Cl)-, -CH(NH₂)-,
 -CH(NH₂)-CH₂-, -CH(N(CH₃)₂)-, -CH(N(CH₃)₂)-CH₂-, -CH₂-CH(N(CH₃)₂)-CH₂-
 CH(N(CH₃)₂)-CH₂-, -CH(F)-, -CH(F)-CH₂-, -CH₂-CH(F)-CH₂-.

24. A compound according to claim 1, wherein Q is an unsubstituted, unbranched alkylene with 1-3 carbon atoms, -CH(OH)-CH₂- or -CH(OH)-CH₂-CH₂-.

25. A compound according to claim 1, wherein Z is -CH₃, -CH₂-CH₃, -(CH₂)₂-CH₃,
 -(CH₂)₃-CH₃, -(CH₂)₄-CH₃, -(CH₂)₅-CH₃, -(CH₂)₆-CH₃, -(CH₂)₇-CH₃, -CH₂-C(CH₃)₂-CH₂-CH₃,
 -CH₂-CH(CH₃)-CH₂-CH(CH₃)-CH₂-CH₃, -CH(OH)-CH₃, -CH₂-CH(OH)-CH₃,
 -CH₂-CH(OH)-CH₂-CH(OH)-CH₂-CH₃, -CH(OCH₃)-CH₃, -CH₂-CH(OC₂H₅)-CH₃,
 -CH₂-CH(OCOCH₃)-CH₂-CH(OCOCH₃)-CH₂-CH₃, -CH₂-CH(OCOC₄H₉)-CH₂-CH₃,
 -CH₂COCH₂-CH₃, -CH₂-CH(Cl)-CH₃, -CH₂-CH(N(CH₃)₂)-CH₂-CH(N(CH₃)₂)-CH₂-CH₃,
 -CH₂-CH(F)-CH₂-CH₃.

26. A compound according to claim 1, wherein Z is 1-oxoalkyl having 1-12 C atoms, alkyl having 1-12 C atoms or alkenyl having 1-12 C atoms.

27. A compound according to claim 1, wherein group V is a hydroxyl group and W is a hydrogen atom.

28. A compound according to claim 26, wherein Z is 1-oxopropyl, 1-oxobutyl, 1-oxopentyl, 1-oxohexyl, 1-oxoheptyl, 1-oxooctyl, 1-oxononyl, 1-oxodecyl, acetyl, methyl, ethyl, propyl, butyl, pentyl, hexyl, heptyl, octyl, nonyl, decyl, 1-propenyl, 1-butenyl, 1-pentenyl, 1-hexeynyl, 1-heptenyl, 1-oxtenyl, 1-nonenyl, 1-decenyl. --